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Systematics and Ecology of the Subgenus *Ixodiopsis* (Acari: Ixodidae: *Ixodes*).—Richard G. Robbins and James E. Keirans. 1992. Entomological Society of America, Lanham, Maryland. Thomas Say Foundation, volume 14, viii + 159 pp.

This monograph of a small (seven species) holarctic subgenus of ticks includes a systematic and phylogenetic study, summaries of host records and ecology, and a zoogeographic analysis. These ticks are parasites of small mammals and transmit piroplasms between rodents, although they are not vectors of Lyme Disease. The monograph was developed from the senior author's Ph.D. thesis at George Washington University.

The revisionary study includes no taxonomic changes in the subgenus—there are no new taxa, synonymies, or nomenclatorial changes. The species are fully described in all instars and illustrated with excellent scanning electron micrographs. Especially valuable to North American acarologists are the descriptions of the Old World species and analyses of the Russian literature. Differential diagnoses of the species and range maps are lacking, although very complete data are provided for all 3,851 specimens examined. The authors assume that readers are familiar with the specialized morphological terminology used in tick systematics, and indeed no key is presented to the subgenera of *Ixodes*. Readers should have at hand Clifford et al.'s (1973) subgeneric revision (in which *Ixodiopsis* keys to *Pholeoixodes*) and illustrations of key characters (e.g., Keirans and Clifford, 1978).

The authors claim that this is the first phylogenetic study of a taxon of ticks, although it is roughly contemporaneous with Klompen's (1992) phylogenetic analysis of argasid ticks based on larval characters. Twenty-two morphological characters are analyzed using Hennig86 and a single outgroup taxon, a species in the presumed sister subgenus *Pholeoixodes*. Although no technical information is provided concerning the computer-based analysis, the authors imply that a single most parsimonious cladogram results, with the seven species falling into two species groups.

In describing the subgenus *Ixodiopsis* and contrasting it with *Pholeoixodes*, the authors do not always distinguish plesiomorphous from apomorphic characters. In fact it is not evident that the six characters supporting *Ixodiopsis* are all apomorphies, especially since three undergo reversal within the subgenus. Most North American acarologists have placed *Ixodiopsis* as a synonym of *Pholeoixodes* (Clifford et al., 1973; Keirans and Clifford, 1978). Robbins and Keirans (1987) were the first North Americans to consider it distinct. Recognition of *Ixodiopsis* probably makes *Pholeoixodes* paraphyletic, as the authors knowledge.

A complete host list is provided for all species in the subgenus; most reported hosts are sorcid insectivores and cricetid and arvicolid rodents. The ticks are en-

dophilic, completing their life cycles in host nests, and most species have restricted host ranges and occur only in cool moist climates. The exception is *Ixodes angustus*, the only holarctic species, which is common on a wide variety of hosts. The authors hypothesize that *I. angustus* is similar to the ancestral *Ixodiopsis*, although their phylogenetic analysis actually places it at the tip of one of the two clades.

The chapter of greatest interest to non-tick-specialists concerns zoogeography. The authors present an excellent overview of the formation and ecology of the Bering Land Bridge (Beringia) during the Pleistocene, and the resultant migration of mammals from Eurasia to North America. Based on the phylogenetic analysis and present distribution and host species of *Ixodiopsis*, speciation within the subgenus occurred 1.8–2.2 million years ago, and the subgenus dispersed across Beringia with the first modern microtine rodents. Subsequent speciation events were associated with host switches. These events are paralleled by radiation within the flea family Hystrichopsyllidae.

A hard-cover book of 159 pages may seem a lot to dedicate to only seven species of ticks which are of little direct importance to humans. On the other hand, a worldwide picture of a monophyletic taxon is the result, coupled with an evolutionary analysis based on cladistics, ecology, and geographic distribution.—George C. Eickwort, Department of Entomology, Comstock Hall, Cornell University, Ithaca, New York 14853-0999.

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A Synopsis of the Holarctic Miridae (Heteroptera): Distribution, Biology, and Origin, with Emphasis on North America—A. G. Wheeler, Jr. and Thomas J. Henry. 1992. Published by the Entomological Society of America (Lanham, Maryland) as Thomas Say Foundation Volume XV. [v+] 282 pp., 77 distribution maps, 31 figures (habitus line drawings). Hardback. ISBN 0-938522-39-6. Format: 15 by 22.5 cm. ESA Member Price US \$30.00. Nonmember Price US \$50.00, postpaid. Text in English.

“The study of the geographical distribution of insects is a subject which has received attention from many entomologists, yet one which is still in an infant stage of development.”

(J. L. Gressitt, 1958)